

# COAST Award Abstract

## Abstract

The ocean is becoming noisier with increased shipping and offshore human activity. Beaked whales (Ziphiidae) and sperm whales (Physeteroidea) are among the species at risk of harm from noise pollution, but little is known about their spatial and temporal distributions. They rely on acoustic signaling for basic life functions like communication and foraging, but the extent of harm from anthropogenic activity is unclear. Passive acoustic monitoring (PAM) is a non-invasive tool that can provide insight of these deep-diving species where visual data collection methods fall short. PAM can also provide information about the soundscape in a changing world. This research aims to characterize the extent of spatiotemporal noise exposure in relation to acoustic beaked and sperm whale detections in the California Current Ecosystem. Drifting acoustic recorders were deployed to collect GPS point data, broadband levels, octave band level, third octave level, power spectral density. These csv files were read into RStudio. Date-time attributes were rounded to the nearest 20-minute mark and joined based on the common date-time attribute. Soundscape metrics were analyzed in space and time in relation to whale detections. Preliminary results show that the presence of whales is not necessarily associated with a louder soundscape and one area is louder than the other. Further analysis will characterize the sound inshore and offshore, species composition in louder areas, Exploratory research like the current study acts as the preliminary step when data are limited or difficult to obtain. In exploring this fine-resolution data over multiple iterations, I can better characterize the relationship between soundscapes and beaked and sperm whale presence in space and time.